

Chapter 2

Color

Whether you're defusing a ticking time bomb, or trying to design a decent-looking site, if you choose the wrong color—you're doomed. Okay, so the wrong color selection for a client's site might not be the death of you, but it could curtail your budding career as a web designer. Choosing colors is no simple matter. There are aesthetic, identity, and usability considerations to take into account. And, to make matters worse, most modern displays can render more than sixteen million colors. That's an infinite number of horrible color combinations just waiting to happen!

Fortunately, there's no need to be a swatchbook-carrying color consultant to make good color choices. A wealth of knowledge is available, from touchy-feely (as I like to call them) psychological guidelines to tried-and-true color theories that will help you make the right choices when it comes to color.

The Psychology of Color

Color psychology is a field of study that's devoted to analyzing the emotional and behavioral effects produced by colors and color combinations. Ecommerce website owners want to know which color will make their website visitors spend more money. Home decorators are after a color that will transform a bedroom into a tranquil Zen retreat. Fast-food restaurant owners are dying to know which color combinations will make you want to super-size your meal. As you can imagine, color psychology is big business.

Although it's important to know how your color choices might affect the masses, the idea that there's a single, unified, psychological response to specific colors is spurious. Many of the responses

that color psychologists accredit to certain colors are rooted in individual experience. It's also interesting to note that many cultures have completely different associations with, and interpretations of, colors. With those caveats in mind, let's explore some general psychological associations that the majority of people in Western cultures have in response to specific colors.

Color Associations

Describing the emotional connections that people can have with colors can be a very hippy-esque topic. If you find that hard to believe, just head over to your favorite online music store and sample some tracks from *Colors* by Ken Nordine. Although most designers will stop short at relying solely on the supposed meanings, characteristics, and personalities of specific colors, it's still handy to have an understanding of the emotional attributes of some of the main color groups.

Red

The color red has a reputation for stimulating adrenaline and blood pressure. Along with those physiological effects, red is also known to increase human metabolism; it's an exciting, dramatic, and rich color. Red is also a color of passion. Nothing says love like painting a wall bright red on Valentine's Day for your sweetheart, as seen in Figure 2.1. The darker shades of red, such as burgundy and maroon, have a rich, indulgent feeling about them—in fact, they can be quite hoity-toity. Think about these colors when designing anything for wine enthusiasts or connoisseurs of fine living. The more earthy, brownish shades of red are associated with the season of autumn and harvest.



Figure 2.1. Red, the color of affection (two gallons of it!)

Orange

Like red, orange is a very active and energetic color, though it doesn't evoke the passion that red can. Instead, orange is thought to promote happiness, and represents sunshine, enthusiasm, and creativity. Orange is a more informal and less corporate-feeling color than red, which is perhaps a reason why the designers behind the location-based service Gowalla¹ chose it for

¹ <http://gowalla.com/>

their logo. Because orange doesn't show up often in nature, it tends to jump out at us when we see it. For that reason, it's often used for life jackets, road cones, and hunting vests. Since orange also stimulates metabolism and appetite, it's a great color for promoting food and cooking. That's probably why the picture of a tangerine in Figure 2.2 is making you hungry, even if you don't like citrus fruits.



Figure 2.2. Orange you glad I didn't say banana?

Yellow

Like orange, yellow is an active color, and being highly visible, it's often used for taxicabs and caution signs. It's also associated with happiness and, as Figure 2.3 illustrates, is the signature color of smileys. The original orange and lemon-lime flavors of the sports energy drink Gatorade are still the best-selling of the brand's products; this is likely due, in part at least, to the energetic characteristics associated with the colors orange and yellow.



Figure 2.3. Yellow, the color of smileys

An anonymous quote that's often used with color associations says, "Babies cry more in yellow rooms, husbands and wives fight more in yellow kitchens, and opera singers throw more tantrums in yellow dressing rooms." Whether this comment is true or not, the point is that too much

yellow can be overpowering. Come on—if you were a baby stuck in a dressing room with fighting spouses and tantrum-throwing opera singers, you’d cry too!

Green

Green is most commonly associated with nature. It’s a soothing color that symbolizes growth, freshness, and hope. There’s little doubt why the color has been so closely tied with environmental protection. Visually, green is much easier on the eyes, and far less dynamic than yellow, orange, or red. Although many website designs using green appeal to visitors’ sense of nature, green is a versatile color that can also represent wealth, stability, and education. When bright green is set against a black background, it really pops—giving the design a techy feel. For me, it brings back memories of my first computer, a trusty old Apple IIe. This was the inspiration for the MailChimp loading screen I designed recently, shown in Figure 2.4.

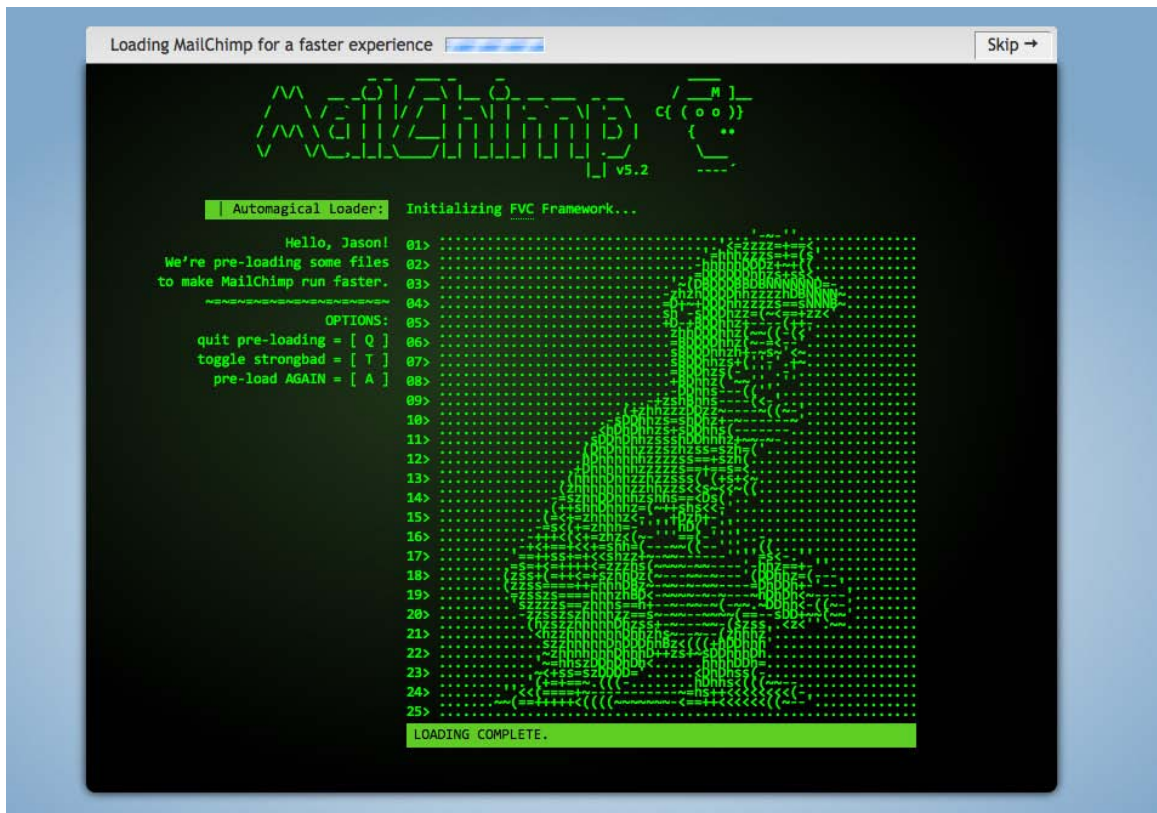


Figure 2.4. ASCII version of Freddie Von Chimpenheimer IV

Blue

When I was a kid, my favorite color was blue. Not just any blue, but cerulean blue from Crayola crayons. While most kids are less particular, blue is often cited as the universally favorite color. On the touchy-feely level, blue symbolizes openness, intelligence, and faith, and has been found to have calming effects. On the other hand, blue has also been found to reduce appetite. This is probably due in part to the rarity of blue in real food. Aside from blueberries, how many

naturally blue foods can you count? Blue, it would seem, is excluded from nature's appetite-inducing palette; therefore, it's less than ideal for promoting food products.

In addition, blue is sometimes seen as a symbol of bad luck and trouble. This emotional color connection is evident in blues music, as well as in the paintings of Picasso's depression-induced "blue period." It's not all about unnatural food colors and melancholy forms of art, though; blue has universal appeal because of its association with the sky and the sea. For me, the presence of blue in the stacked stones image in Figure 2.5 makes me feel more at ease.



Figure 2.5. Calming stones, sky, and sea

This visual connection makes blue an obvious choice for websites associated with airlines, air conditioning, pool filters, and cruises. Have you ever noticed that blue is the primary color in the logos of IBM, Dell, HP, and Microsoft? That's because blue also conveys a sense of stability and clarity of purpose ... that is, until you've experienced the blue screen of death!

Purple

Historically, the color purple has been associated with royalty and power, as it is on the postage stamp in Figure 2.6. The secret behind purple's prestigious past has to do with the difficulty of producing the dye needed to create purple garments. To this day, purple still represents wealth and extravagance. That extravagance is carried over into nature. Purple is most often connected with flowers, gemstones, and wine. It balances the stimulation of red and the calming

effects of blue. According to Patrick McNeil, author of *The Web Designer's Idea Book*,² purple is one of the least-used colors in web design. He explains that finding good examples of website designs featuring purple was so hard that he almost had to cut the section from his book. If you're trying to create a website design that stands out from the crowd, think about using a rich shade of purple.



Figure 2.6. Purple coat of arms on a Norwegian postage stamp

White

You might think there's nothing special about the color of the wind turbines in Figure 2.7, but the use of white actually helps promote the idea that this is clean power. In Western cultures, white is considered to be the color of perfection, light, and purity. This is why crisp white sheets are used in detergent commercials, and why a bride wears a white dress on her wedding day. For an idea of how ingrained the meaning of white is in our culture, read the poem *Design* by Robert Frost.³ In it, Frost symbolically contradicts our associations by using white to represent death and darkness. Interestingly, in Chinese culture, white is a color traditionally associated with death and mourning. Such cultural distinctions should serve as a reminder to research the color associations of your target audience, as they may vary greatly from your own perception.

In design, white is often overlooked because it's the default background color. Don't be afraid to shake it up, though. Try using a dark background with white text, or put a white background block on an off-white canvas to make it pop. Using colors in unexpected ways can make a bold statement.

² Patrick McNeil, *The Web Designer's Idea Book*, How Books, Cincinnati, USA, 2008

³ This can be found in many a good poetry book, but I used *The Norton Anthology of Poetry* (5th edition), eds Margaret Ferguson, Mary Jo Salter, and Jon Stallworthy, WW Norton & Company, New York, 2004.



Figure 2.7. These wind turbines might be white, but they're also green

Black

Although black often suffers from negative connotations such as death and evil, it can also be a color of power, elegance, and strength, depending on how it's used. If you're considering using a particular color and are wondering what the associations are for that color, just ask yourself, "What are the first three things that come to mind when I think about this color?" When I think about black, for instance, I think about Johnny Cash, tuxedos, and Batman. When I think about Johnny Cash, his dark clothing, deep voice, and sorrowful songs give a tangible meaning to the mental associations I perceive between the man and the color.



Figure 2.8. Black, a color that represents power, elegance, and in this case, exorbitance

If you treat all your color choices this way, establishing three word associations for each, chances are you'll gain a good idea of how that color is widely perceived among your audience.

Even though color psychology plays a role in the way a visitor may see your site, keep in mind there is no wrong color to use. While psychological reasoning may help to start your palette, the success of a color scheme depends on the harmony that exists between all the colors chosen. To achieve this harmony, we'll need to be mindful of a few other attributes of color.

Color Temperature

One attribute that exists across the entire spectrum is the notion of color temperature. Which color faucet gives you hot water? What color do you associate with ice? Why? The answers are obvious, and are enforced by both culture and nature.



Warm colors are the colors from red to yellow, including orange, pink, brown, and burgundy. Due to their association with the sun and fire, warm colors represent both heat and motion. When placed near a cool color, a warm color will tend to pop out, dominate, and produce the visual emphasis that we talked about in Chapter 1.



Cool colors are the colors from green to blue, and can include some shades of violet. Violet is the intermediary between red and blue, so a cooler violet is, as you probably guessed, one that's closer to blue, while a reddish violet can feel warm. Cool colors are calming, and can reduce tension. In a design, cool colors tend to recede, making them great for backgrounds and larger elements on a page, since they won't overpower your content.

Chromatic Value

The measure of the lightness or darkness of a color is known as its chromatic value. Adding white to a color creates a **tint** of that color. Likewise, a **shade** is produced by adding black to a given color. Figure 2.9 illustrates this distinction.



Figure 2.9. Chromatic value

As with colors themselves, the chromatic value of colors you're using can impact upon the psychological connection users will have to the content. One use of chromatic value might be to accent the time of day that customers associate with a company or organization. If you were designing a website that's all about nightlife or concerts, for instance, you'd probably want to go with dark shades and limit your use of light tints. Tints tend to be associated with daylight, springtime, and childhood. Think: sunrise, baby clothes, and Care Bears. These light pastel colors can be used in professional, sophisticated, grown-up ways, too, as anyone who's ever spent time in a hospital can attest. This is because tints are soothing colors that provide personality to sterile environments without startling the ill or making babies cry. Color designers are generally uninspired by colors such as "Hospital Green," but if you're working on a website for a day spa, tints would be a great foundation for your color palette.

Saturation

The **saturation** or **intensity** of a color is described as the strength or purity of that color. It's obvious that intense, vivid colors stand out. Even though cool colors tend to recede, a vivid blue will draw more attention to itself than a dull orange. When we add gray (black and white) to a color, it becomes dull and muted. Like an office with beige walls, or an overcast winter morning, these colors are less exciting or appealing as bright, vivid colors. On the bright side—no pun intended—dull colors help to reduce tension, giving compositions a meditative, dreamy mood.

The relationship between value and saturation is illustrated in Figure 2.10.

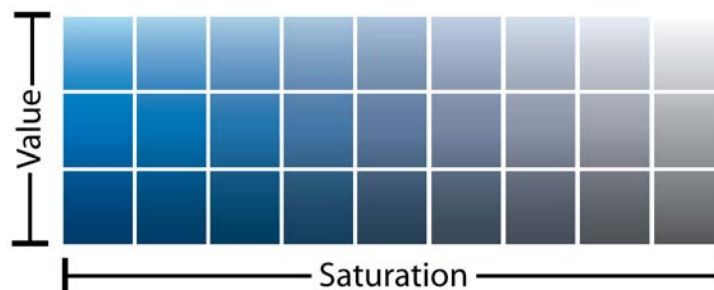


Figure 2.10. Value and saturation chart

Color Theory 101

To take our foundational knowledge of color any further, we'll need to gain a grounding in some of the more technical concepts associated with the subject, such as how colors are formed and how they can be categorized.

The colors displayed on your computer screen (that is, the colors we'll be using in our website designs) are based on an **additive** color model. In an additive color model, colors are displayed in percentages of red, green, and blue (RGB) light. If we turn all three of these colors on full blast, we'll have white light. If we turn red and green all the way up, but switch off blue, we have yellow.

If you've ever owned a color printer, you might be familiar with the acronym CMYK (cyan, magenta, yellow, and black). Your ink-jet printer, laser printer, and industrial four-color printing press all create images using cyan, magenta, yellow, and black inks or toners. This process uses a **subtractive** color model; by combining colors in this color model, we come close to achieving a grayish black. There's no way of producing black combining just cyan, magenta, and yellow. This is why they're always supplemented with black—the K in CMYK. Take a look at Figure 2.11 for a better idea of how additive and subtractive color models work.

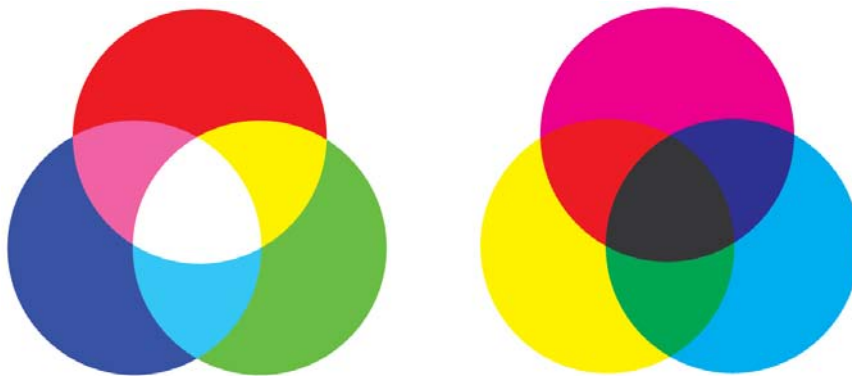


Figure 2.11. RGB additive color model (left) and the CMYK subtractive color model (right)

Regardless of whether you're designing for print or the Web, the lessons of traditional color theory are key to helping us classify colors and group them together. Recorded studies of color classification date back to the third century BC and the works of Aristotle. Since then, many other great artists and philosophers have contributed to our knowledge of how colors work, including Isaac Newton, Johann Wolfgang von Goethe, and Johannes Itten. The works of these individuals, in the 17th, 18th, and 19th centuries respectively, provide the foundations on which much of our understanding of color lies. All three theorists explained colors in relation to a color wheel, using red, yellow, and blue as the primary colors. The color wheel is a simple but effective diagram developed to present the concepts and terminology of color theory. The traditional artists' wheel is a circle divided into 12 slices, as Figure 2.12 indicates. Each slice is either a primary color, a secondary color, or a tertiary color.

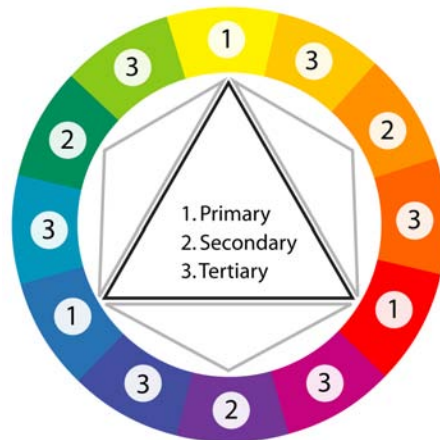


Figure 2.12. The traditional red, yellow, and blue artists' color wheel

Primary colors

The primary colors of the traditional color wheel are red, yellow, and blue. These hues form an equilateral triangle on the color wheel, and commencing from a primary color, every fourth color represents another primary color.

Secondary colors

By mixing two primary colors, we create secondary colors, indicated here by the small gray triangles. The secondary colors are orange, green, and purple.

Tertiary colors

There's a total of six tertiary colors: vermilion (red-orange), marigold (yellow-orange), chartreuse (yellow-green), aquamarine (blue-green), violet (blue-purple), and magenta (red-purple). As you might already have guessed, mixing a primary color with an adjacent secondary color forms the tertiary colors.

Red, Yellow, and Blue, or CMYK

I'm constantly amazed by the lack of respect that exists for the red, yellow, and blue primary color wheel. I've heard people call it invalid, archaic, and a kindergarten tool. It's true that the red, yellow, and blue color wheel is not a scientifically accurate model of the perception of light. Many people want to eliminate the red, yellow, and blue color wheel from art curricula, and establish the CMYK color wheel, shown in Figure 2.13, as the universal color model. Note that the secondary colors in the CMYK color wheel are red, green, and blue, meaning that we could use the CMYK to illustrate both additive (using light) and subtractive (on paper) color.

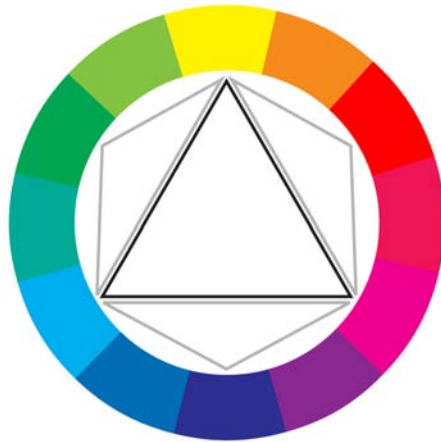


Figure 2.13. The CMYK color wheel

To illustrate the reasoning behind the push to move to CMYK, I've used gouache paints, which are basically watercolors that come in a tube. When mixed with water, they are fairly translucent and produce the colors you would expect to see on the modern CMYK color wheel, as Figure 2.14 shows. Magenta and yellow mix to produce nice shades of orangey reds, while cyan and yellow mix to produce green and minty tones. This is how CMYK printing works. The inks are translucent and the overlap between them (along with the use of black—don't forget good ol' K) gives us most of the colors we can see on an additive, light-emitting monitor or TV. As the famous TV painting instructor Bob Ross might have said, "That's a happy little color model."



Figure 2.14. Playing with CMY gouache paints

Wait! What's that purple splodge? Yes, equal amounts of cyan and magenta form a violet or purple, instead of the pure blue suggested by the CMYK color wheel. Numerous anomalies like this crop

up when we mix opaque pigments. Basically, if your paint is so thick that you're unable to see the white paper or canvas on which you're painting, the concepts of a CMYK color wheel start to fail. In this regard, the traditional red, yellow, and blue color wheel developed by Goethe, Itten, and others over the last four centuries or so is a much better model.

But we're using pixels, not paint! The reason many digital artists still keep a red, yellow, and blue color wheel handy is because the color schemes and concepts of traditional color theory are based on that model. As we'll see shortly, the relationships between colors are largely determined by their relative positions on the color wheel. But those positions differ depending on the wheel; for instance, on the traditional color wheel, red and green are opposite, whereas on the CMYK wheel, cyan is opposite red. We can't simply shift the red and blue around the color wheel and call it a day. Because of this, the color schemes that I'll be discussing in the next few pages are based on the red, yellow, and blue color model.

There are flaws to be found in both color wheel models, and complementary colors are a prime example. But what's really going to bake your noodle is when I tell you that there is no color wheel that can fully describe the complexities of the way in which we perceive color from light. Even though I design mostly for the Web—a medium that's displayed in RGB—I still use red, yellow, and blue as the basis for my color selections. I believe that color combinations created using the red, yellow, and blue color wheel are more aesthetically pleasing, and that good design is about aesthetics. Therefore, I'm going to present color theory as I learned it in my sophomore design fundamentals class in college: from the traditional red, yellow, and blue color wheel.

The Scheme of Things

Currently, we know enough about colors to talk about their values, intensities, psychological associations, temperatures, and locations on the traditional color wheel. That's all well and good, but how do we find multiple colors that work together? This is where color schemes come in handy. Color schemes are the basic formulae for creating harmonious and effective color combinations. Six classic color schemes exist:

- monochromatic
- analogous
- complementary
- split complementary
- triadic
- tetradic (also called double complementary)

In order to employ any of these classic color schemes, we must start with a color. Consider the subject of the website you're working on, and choose a base color that suits the site's purpose. Of course, this choice may be out of your hands. Sometimes, you'll have to work within a company's rules, perhaps adhering to seemingly inane and eccentric color guidelines. Let's assume that the

site you're designing is for a proud family of hoity-toity circus monkeys. These circus monkeys still believe they have a royal lineage, so they have requested that we incorporate a regal purple into the design. Silly monkeys ... but you know what they say: "the client is always right."

A Monochromatic Color Scheme

When we talked about the value of color earlier, we talked about tints and shades. A monochromatic color scheme—like the one shown in Figure 2.15—consists of a single base color and any number of tints or shades of that color.



Figure 2.15. A monochromatic monkey

Monochromatic Color Scheme Examples

Hot pink is a super-saturated color that packs a powerful punch when paired with black and white. This is obviously what Indiana-based web agency Solid Giant⁴ was going for with the monochromatic color scheme you see in Figure 2.16. Each section of this single-page, scrolling site alternates between a textured white background and a pink one that's as bright as the "superawesome" copy on the home page.

⁴ <http://www.solidgiant.com/>



Figure 2.16. The Solid Giant website contrasts color effectively

Another example of saturated, monochromatic design can be found in the personal site of author, speaker, and user experience designer Aarron Walter.⁵ Each page of the site features a different monochromatic color scheme. The darkening content rows you see on Aarron's home page in Figure 2.17 are the result of a clever use of RGBA transparency. Each row of content has a transparent black background. When the page loads, JavaScript assigns an incrementally higher alpha (opacity) value to each block, creating a rich monochromatic color scheme for each page.

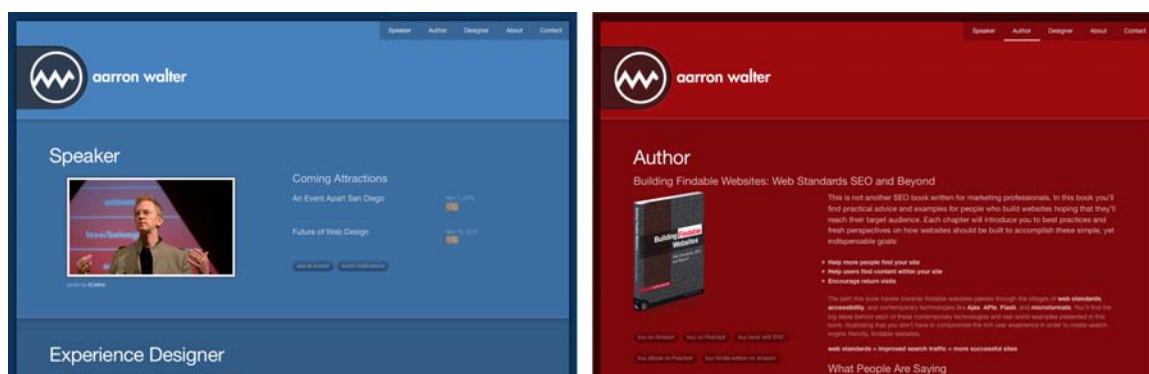


Figure 2.17. Aarron Walter's site features a different color scheme for each page

⁵ <http://aaronwalter.com/>



Changing Color Schemes

Many websites use different color schemes for each section of content. This approach can add richness and character to the content, but may also produce some identity issues. If you're going to use multiple color schemes within a single site, be sure to keep the logo, menu, and overall layout of the site consistent to avoid confusion.

Art in My Coffee⁶ is a Tumblr blog created by Jina Bolton and designed by Meagan Fisher, which catalogs latte art from all around the world. It's no surprise, then, that the site features a monochromatic color scheme based around creamy tints of tasty brown coffee, as you can see in Figure 2.18. If you know that the photos and content of your site will feature lots of the same color, it's a terrific idea to follow Meagan's lead and design your color scheme around the content.



Figure 2.18. Art in My Coffee—featuring colors directly drawn from the site's subject matter

The site for New Zealand's Black Estate Vineyard⁷ in Figure 2.19 features a special breed of *monochromaticism*. Yes, I just made that word up. Any set of colors that consists solely of black, white, and shades of gray is known as an **achromatic** color scheme. The word achromatic literally means “without color.” Just because the overall scheme of the site has no color, it doesn't mean the content

⁶ <http://artinmycoffee.com/>

⁷ <http://blackestate.co.nz/>

has to be colorless as well. Because of the dark background, ample use of “white” space, and lack of surrounding color, the vibrant photographs pop off the page, giving life and light to the design.

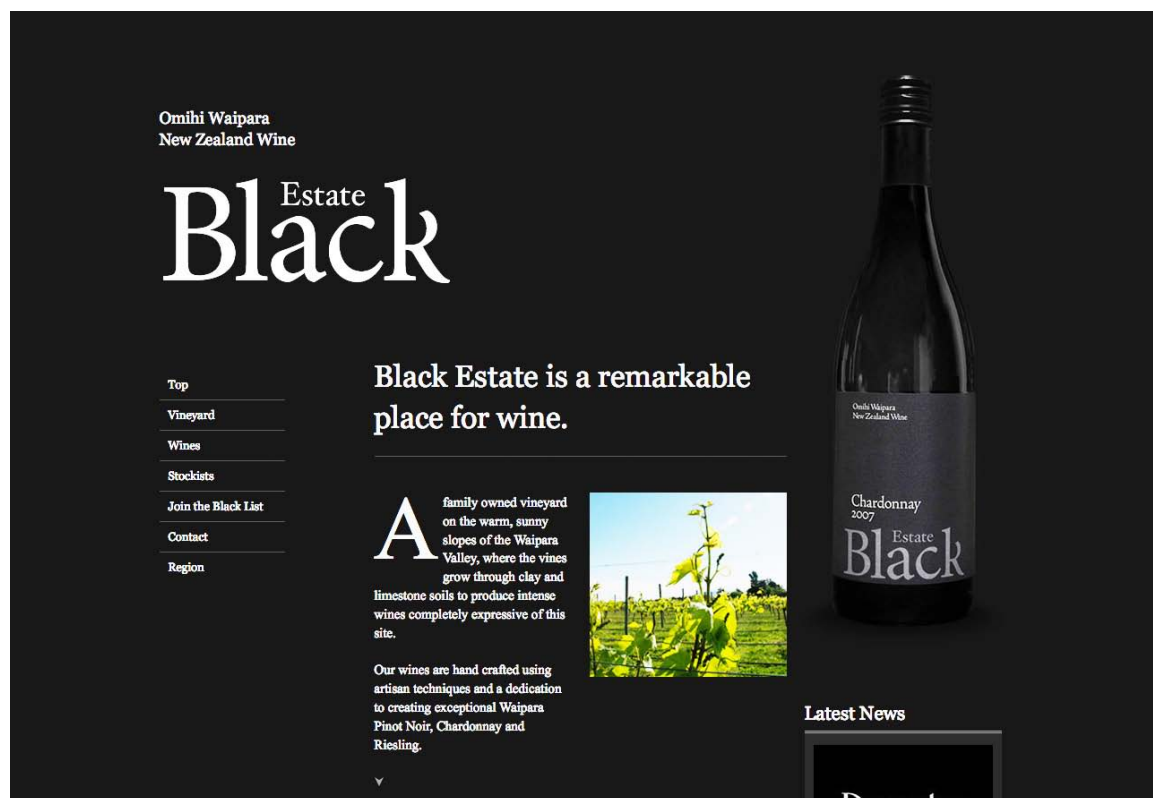


Figure 2.19. Black Estate wines—living up to its name

An Analogous Color Scheme

An analogous color scheme consists of colors that are adjacent to one another on the color wheel. If our color wheel were a delicious pie (mmm, pie!), then an analogous color scheme would be a fairly large slice. The key to creating a good analogous scheme is to remember that your eyes are bigger than your appetite. As a rule of thumb, avoid having a slice that’s bigger than one-third of the whole, or you’re bound to make users sick. Returning to our hoity-toity monkeys in the design shown in Figure 2.20, we’ve taken their regal purple and warmed it up with some orange tones.



Figure 2.20. An analogous monkey

Analogous Color Scheme Examples

The playful illustrations on the home page for Forrst⁸ deepen the metaphor of this designer/developer community. While you're snickering at the park ranger's SpongeBob-like legs or the "Log In" pun in Figure 2.21, note the rich analogous color scheme. From the teal sky to the orangey browns, the colors of this design are contained within a one-third wedge of our color wheel pie.



Figure 2.21. Lost in the Forrst

⁸ <http://forrst.com/>

Blinksale,⁹ shown in Figure 2.22, is a hosted web application that creates, manages, and sends CSS-formatted and plain-text invoices. It's also an excellent example of what a creative analogous color scheme can do for a business website. It crumples up those preconceived notions of how corporate websites should look, and tosses them into a cool sea of colors ranging from blue-green to yellow. Be sure to note how color contrast makes their call to action the first thing you see. The perspective lines of the screenshot on the right also take advantage of continuance, constantly guiding your eyes back toward that sign-up button.

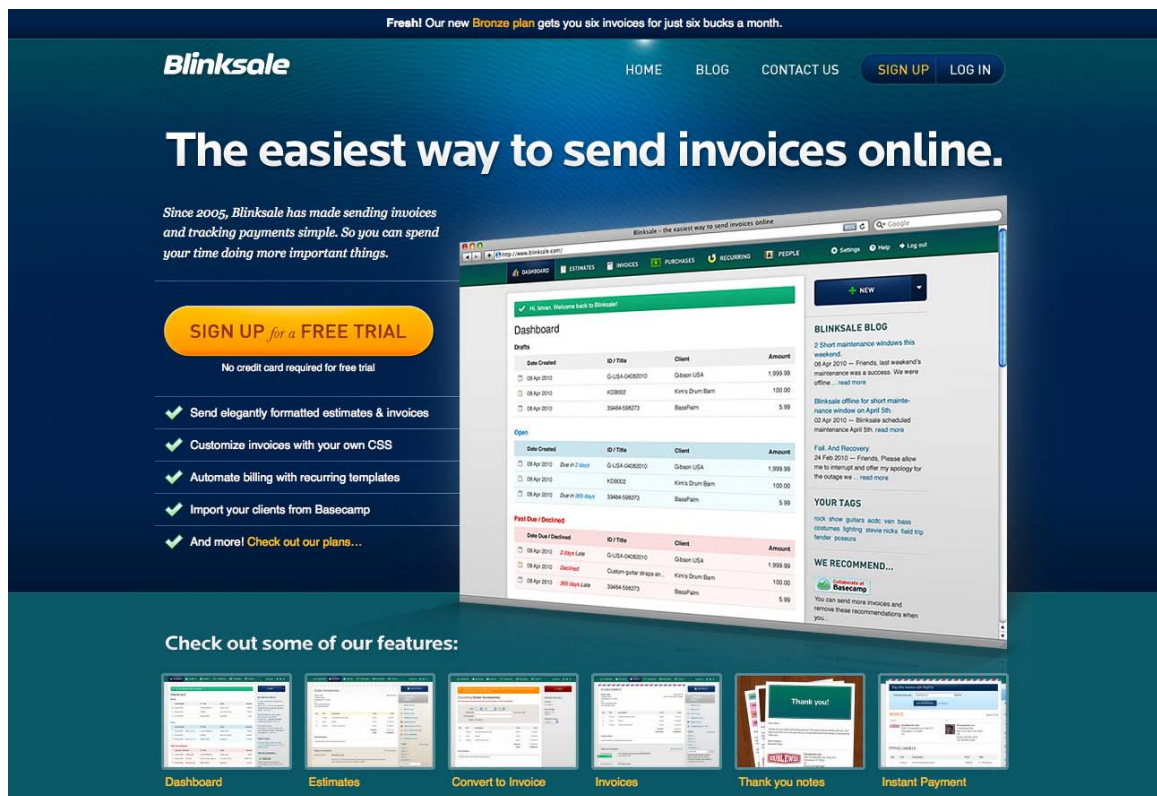


Figure 2.22. Blinksale's site is professional without being staid

While Blinksale's home page is designed to dazzle and amaze, the Zappos home page (Figure 2.23) gets straight down to business. This is achieved by relying on a solid analogous color scheme of blues and greens. The brightly colored search button at the top of the page stands out because it introduces a completely different hue from the rest of the site. One might even say it *complements* the blues on the page ... but what does that mean? Read on to find out.

⁹ <http://blinksale.com/>



Figure 2.23. Zappos gets down to business

A Complementary Color Scheme

Complementary color schemes like the one featured in our updated hoity-toity illustration—shown in Figure 2.24—consist of colors that are located opposite each other on the color wheel. Placing red-violet and yellow-green together is uncommon, but the monkeys insisted that I keep some of their royal purple in the picture. Sheesh ... these clients are a bunch of primates.



Figure 2.24. A funky complementary monkey

Complementary Color Scheme Examples

The University of Florida is my wife's undergraduate alma mater, and the school's orange and blue team colors provide a strong foundation for a complementary color scheme. Some people may be put off by the stark contrast of complementary color schemes found on its athletics website¹⁰ (seen in Figure 2.25), but when the colors represent the business or entity for which you're designing, you can't go wrong.



Figure 2.25. The University of Florida Athletics website uses bold complementary colors

Pittsburgh's Sprout Fund Spring Program website¹¹ in Figure 2.26 proves that complementary color schemes don't have to be as bold as UF's orange and blue. By toning down the saturation, this red and green design looks very natural and earthy, helping support the message of biodiversity. The beautiful illustrations and artistic textures really make this design sing.

¹⁰ <http://www.gatorzone.com/>

¹¹ <http://www.sproutfund.org/spring/>

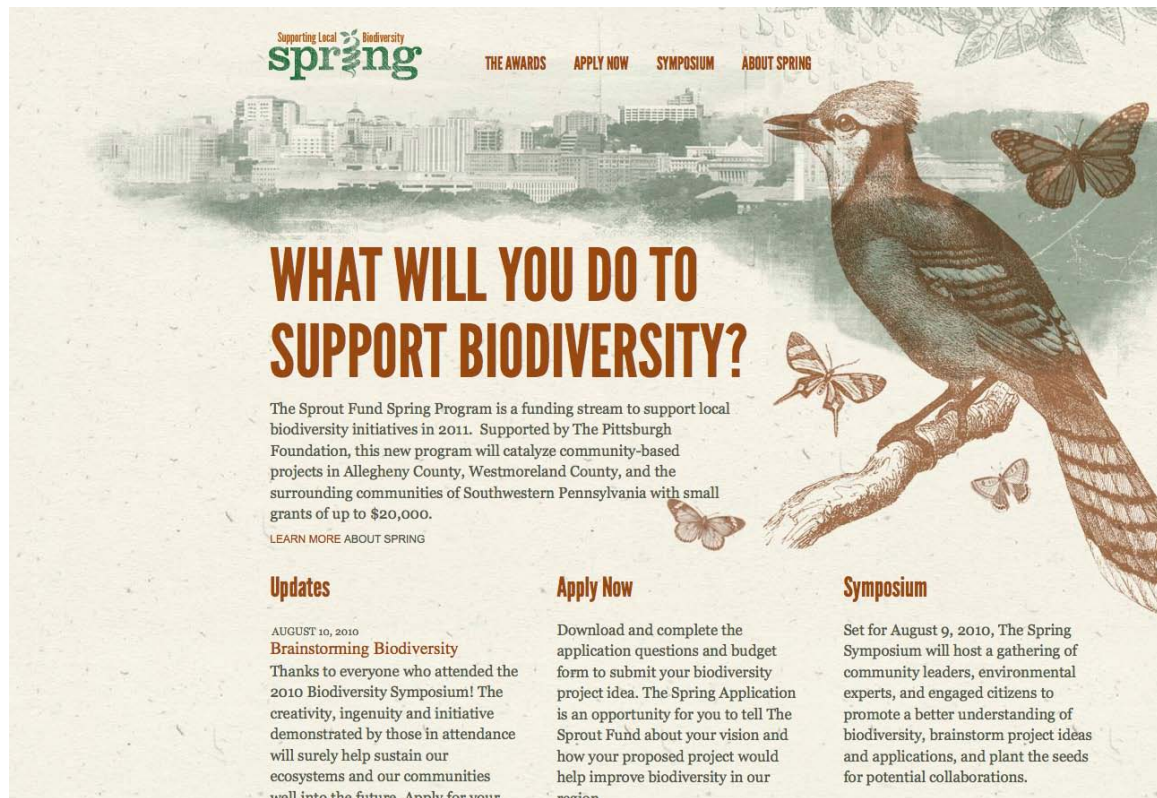


Figure 2.26. The Sprout Fund Spring Program uses complementary colors to a more organic effect

I'm really unsure why so many musicians insist on having all-Flash websites, and then never update them—but I digress. Regardless of the publishing platform, the website for musician Zach Hendricks¹² is a beautiful textbook example of a complementary color scheme, as you can see in Figure 2.27. It's impossible to choose complementary colors without pairing cool with warm, and the designers of this site were well aware of that. The city skyline and bright round sun glow hot against the cool teal water. If you wanted to experiment with this exact color scheme, the secret formula is right there in the overlapping circles of the logo. To this site's credit, there's a non-Flash fallback for those of us trying to access it via iPhone or iPad.

¹² <http://zachhendricks.net/>



Figure 2.27. Zach Hendricks: a textbook example of complementary colors

Common Complementary Pitfalls

Since complementary colors are so different from each other in many ways, they can cause an effect known as **simultaneous contrast** when placed together: this is when each color makes the other appear more vibrant and dominant. This is actually what makes complementary color schemes so successful at moving visitors' eyes around a composition. However, it can be horribly painful when complementary colors are used in a foreground–background relationship, as they are in Figure 2.28.



Figure 2.28. Beware of simultaneous contrast!

Another common pitfall is to choose colors that aren't directly opposite one another on the color wheel, yet aren't close enough to be analogous colors. These combinations are known as **discordants** because the colors will often clash with one another, causing viewer discord. In fact, 1980s fashion was all about discordant colors. Seeing a discordant color scheme these days tends to bring back fond memories of that geometric “designer series” of Trapper Keeper binders I loved so dearly at school—one's depicted in Figure 2.29.



Figure 2.29. A discordant Trapper Keeper cover

As this example shows, this pitfall can be made workable if it's used intentionally. Discordant colors are whizbang combinations that really appeal to children, teens, and tweens, so using them for youth-oriented sites or products is worth considering. They can also be used sparingly in more grown-up designs to create greater emphasis than can be achieved with just a simple complementary combination. For an example of this type of color scheme, check out Bulls+Arrows¹³ in Figure 2.30. The site features several randomly loading background images, each with a color scheme of its own. This particular image pairs bright red with a blue-green that's just far enough from complementary to give this design an edgy look.

¹³ <http://www.bullsandarrows.com/>

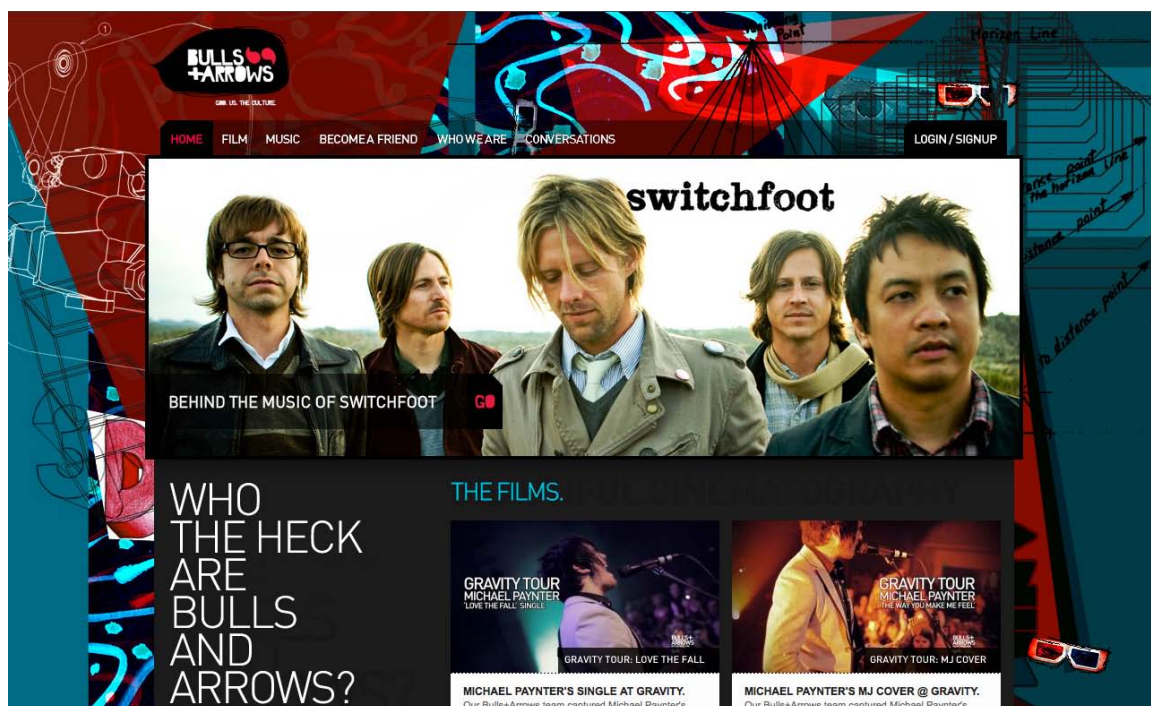


Figure 2.30. The Bulls+Arrows site makes great use of colors that clash

Split-complementary, Triadic, and Tetradic

Split-complementary, triadic, and tetradic color schemes sound technical, but they're just simple variations of a basic complementary color scheme.

To create a **split-complementary** color scheme, use the two colors adjacent to your base color's complement. For example, take the left-most color scheme shown in Figure 2.31. Red is the base color here, so instead of using green to form a complementary scheme, we'll use the two colors adjacent to green, chartreuse (yellow-green) and aquamarine (blue-green), to form a three-color split-complementary scheme. Note that, since you're using your base color with two discordant colors, this type of color scheme can look juvenile and extreme, but that may be just the effect you want.



Figure 2.31. Split-complementary color scheme examples

For a **triadic** color scheme, we just push our split-complements out one more notch on each side, so that all the colors are equally spaced on the color wheel. Starting with red as our base color again, we select yellow rather than chartreuse, and instead of aquamarine, we select blue. This divides the color wheel into thirds, hence the *tri* prefix in triadic. In this example, which is the left-most scheme in Figure 2.32, we have the three primaries (red, yellow, and blue) making up our color scheme. If you turned the scheme clockwise one notch, you'd have chartreuse (yellow-green), violet (blue-purple), and vermilion (red-orange), as shown in the middle example in Figure 2.32.



Figure 2.32. Triadic color scheme examples

Knowing that triadic color schemes involve three colors, you have probably deduced from your extensive knowledge of the Greek language (okay, so maybe you haven't) that a tetradic color scheme involves four colors. A tetradic color scheme combines any complementary color scheme with another complementary color scheme. The left-most example in Figure 2.33 is a tetradic color scheme that combines orange and blue with yellow and purple.



Figure 2.33. Tetradic color scheme examples

The website for River City Church¹⁴ in Jacksonville, Florida (shown in Figure 2.34) is an excellent example of a tetradic color scheme. Notice that there are exactly four colors in this design besides black and white. We have the complements orange and blue, paired with pink and green. Finding pure examples of the six classic color schemes I've described above is a difficult task. That's because sometimes designers make one up from scratch, or it's because they use a slight variation on one of these themes. In the section called "Other Variants" below, we'll discuss a few options.

¹⁴ <http://www.rccjax.com/>



Figure 2.34. The adventurous River City Church

Other Variants

Although most designers are aware of the standard color schemes, the combinations can tend to feel basic and uninspired. However, if you treat the color wheel like a dartboard, and pick whatever colors you land on, you're likely to come up with some truly awful combinations—trust me, I've tried it. Rather than taking that risk, there are other ways to tweak the classic color schemes to create a fresh combination. Once you have a handle on monochromatic, analogous, and complementary color relationships, try experimenting with some of the following:

Monochromatic with mo' pop

Rather than just using tints and shades of your base color, try incorporating pure gray, black, and white. This will create more contrast, and more “pop” within a monochromatic color scheme.

Analo-adjust

Adjust the saturation of one of the colors in your monochromatic scheme up and adjust the others down. A highly saturated color will stand out when placed among muted colors. There should be no analo-guessing which one is the saturated color.

Mono-split-complement

If you have a good thing going with a split-complement color scheme but want to add some depth, try using a few tints and shades of your base color in the design.

Obviously, I just made those names up, but you'll notice that all three variants are similar to the main traditional schemes. It's easy to tweak the traditional color schemes a little for more character, but remember that the color scheme you choose is the foundation from which you'll build your website's color palette. It's important to build on a firm foundation, or the rest of your design could come tumbling down.

Creating a Palette

"A palette?" you might ask. "Isn't that the same as a color scheme?" Well, yes and no. A color scheme will only give you two, three, or four colors to work with. Although a limited palette can be beautiful, you're probably going to need a few more colors to design your website. It's better to nail down this process while you're thinking in the language of color, rather than pick ancillary colors at random as you need them for your layout. The number of colors you'll need will depend on the complexity of your design. I like to start off with at least five or six solid color choices before I even think about applying them to my layout.

Hexadecimal Notation

Since this is the stage in which we become specific about each color we're choosing, we're going to need a standard way to refer to the colors in our palette. You probably already know about hexadecimal RGB color values, but if you don't, here's the quick drive-through version of the theory.

The hexadecimal counting system is much like the decimal counting system you're used to, except that instead of being based on multiples of ten, it's based on multiples of sixteen, and has six additional digits: A (which is the equivalent of decimal 10), B (11), C (12), D (13), E (14), and F (15).

Table 2.1 shows how we count from 1 to 255 in decimal and hexadecimal.

So, what does this have to do with color palettes? Earlier in the chapter, I explained that your monitor uses an additive RGB color model, and that every pixel in the screen is "painted" using a combination of red, green, and blue light. What I failed to mention was that there are 256 different levels of red light, 256 levels of green light, and 256 levels of blue light; we can use these to create 16,777,216 distinct colors.

Thankfully, we have a way of describing each of these colors quickly and easily—using hexadecimal color codes. A hexadecimal color code specifies the levels of red, green, and blue that go into a given color. For example, combining red, green, and blue at their highest possible levels makes white. To use white in a web page, we set its red component to 255 (FF in hexadecimal), its green component to 255 (FF), and its blue component to 255 (FF). We then combine these hexadecimal values in the order red, green, and blue and come up with the code FFFFFFFF.

Table 2.1. Counting from 1 to 255 in hexadecimal

Decimal	Hexadecimal	Decimal	Hexadecimal	Decimal	Hexadecimal
0	00	16	10	32	20
1	01	17	11	33	21
2	02	18	12	34	22
3	03	19	13	35	23
4	04	20	14	...	
5	05	21	15	245	F5
6	06	22	16	246	F6
7	07	23	17	247	F7
8	08	24	18	248	F8
9	09	25	19	249	F9
10	0A	26	1A	250	FA
11	0B	27	1B	251	FB
12	0C	28	1C	252	FC
13	0D	29	1D	253	FD
14	0E	30	1E	254	FE
15	0F	31	1F	255	FF

Black, which is made by setting red, green, and blue to zero (00), has the code 000000. Red, which we can create by setting red to FF and leaving green and blue at 00, has the code FF0000. Figure 2.35 shows several standard colors with their hex value. After you've seen and used a lot of hex colors, you'll start to see the colors in the code. #F26382, for instance, is a coral-colored shade of pink and #371324 is the color of a slightly purple red wine. Once you think you've reached that Jedi Hex-Master status, head over to <http://yizzle.com/whatthehex/> for a little game of "What the Hex?"

#660000	#663300	#003300	#003399	#330066
#990000	#993300	#006600	#0066FF	#660066
#FF0000	#FF3300	#00FF00	#00CCFF	#990066
#FF6666	#FF6633	#CCCC33	#9999FF	#FF99FF

Figure 2.35. Hexadecimal color examples

Color Tools and Resources

Now we all have a basic understanding of how colors are represented as hexadecimal values. The next step is to find out those values for each color with which we want to work. Many resources are available to help you choose colors for your palette, including a ton of stand-alone applications and plugins for both Macs and PCs. Here are a few of my favorites:

Color Scheme Designer 3

Although there are many online color pickers out there, my favorite is Color Scheme Designer¹⁵ (formerly known as the WellStyled Color Scheme Generator), shown in Figure 2.36. Where many other applications use an RGB or CMYK color wheel, this awesome HTML tool uses the traditional red, yellow, and blue color wheel. With just a few clicks, you can choose and customize a color scheme, as well as identify a variety of other colors from which to build a harmonious palette. Once you have a palette you like, you can use the Vision Simulator to see what those colors look like to people with various levels of color blindness; then you can export your colors as HTML/CSS, XML, Text, a Photoshop palette, or a GIMP palette.

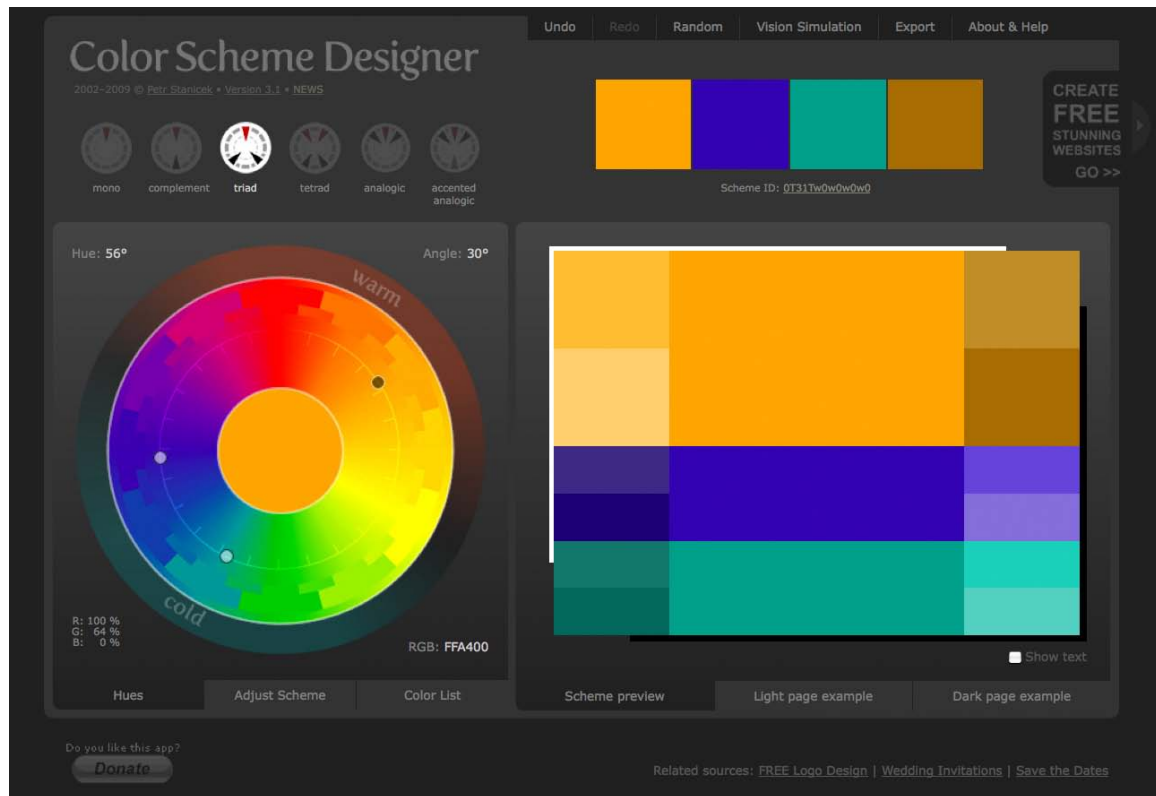


Figure 2.36. Color Scheme Designer 3—the author's pick

¹⁵ <http://colorschemedesigner.com/>

Adobe Kuler

Another excellent color selection resource is Adobe Kuler.¹⁶ On the Kuler website, you can create color combinations based on the standard color scheme configuration similar to the way Color Scheme Designer 3 works. Unlike that site, though, Kuler will also generate a palette from an uploaded image. Another key feature of Kuler is its community. If you create a login for the site, you can save and share your color palettes with other Kuler users, and anyone can browse the most-recent and highest-rated color combinations on the site. Figure 2.37 shows the handy AIR app version of the site, which can be installed on both Macs and PCs.

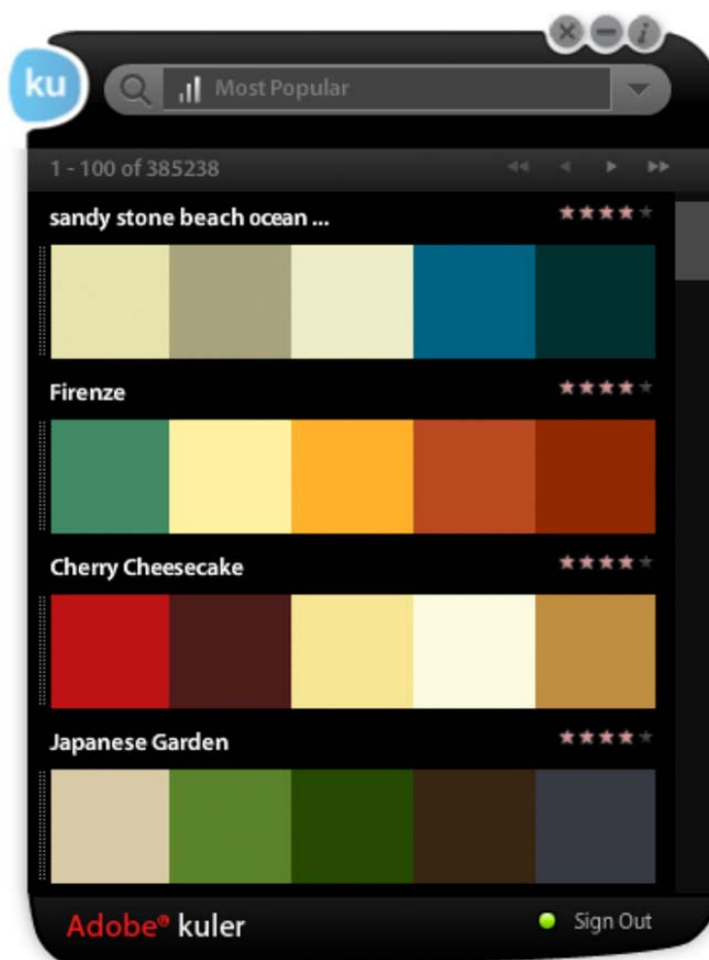


Figure 2.37. The cooler Adobe Kuler

¹⁶ <http://kuler.adobe.com/>

COLOURlovers

If Kuler provides too limited a community to suit your social needs, the COLOURlovers¹⁷ website, shown in Figure 2.38, certainly will. It's less of a color generator tool and more of an inspiration-sharing website. It started off with just color schemes, but now you can also share patterns and view color (or colour if you insist) inspirations for a variety of design fields.

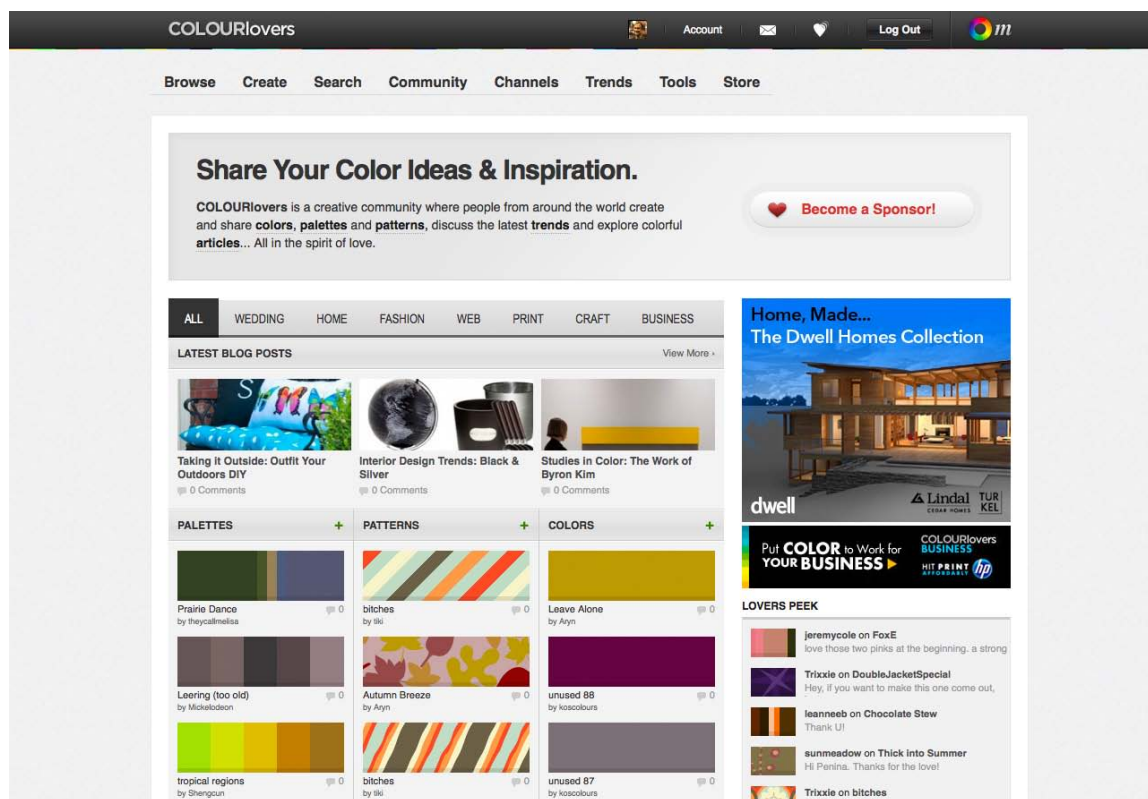


Figure 2.38. COLOURlovers—for lovers of color

Color Stream iPhone App

Color Stream is an app (available for \$2.99 from the iTunes store) that puts some of the best features of Color Scheme Designer and Adobe Kuler into the palm of your hand. Created by Sahil Lavingia, Color Stream lets you create and store color palettes that are either created from scratch, extracted from a photo, or even generated automatically using a built-in color schemer. It really is an elegant, well-polished application that makes picking a color palette fun and easy. Figure 2.39 shows what selecting a color palette from a photo looks like in the app. I called that tasty scheme “heirloom.” For you Android users out there, I’d bet a version of this app will be available by the time this book is in your hands.

¹⁷ <http://www.colourlovers.com/>

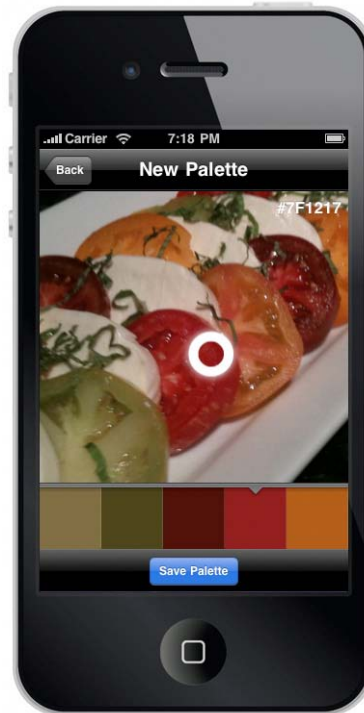


Figure 2.39. Palettes on the go with Color Stream

Pictaculous

Kuler and COLOURLovers are great tools to meticulously tweak and gain social feedback about color schemes you're working on, but what if you see some color inspiration on the go? That's where Pictaculous¹⁸ comes in handy. Pictaculous is a free MailChimp Labs project that provides color schemes based on your pictures via email. You simply take a picture with your smartphone and email it to colors@mailchimp.com. Within a couple of minutes, you'll receive an email with a five-color palette, an assortment of suggested color schemes from Kuler and COLOURLovers, and an attached Adobe color palette (.aco) file. There are alternatives to doing it by email, though. Figure 2.40 shows Pictaculous's color suggestions for a picture that I uploaded to <http://pictaculous.com/> from my computer.

¹⁸ <http://pictaculous.com>

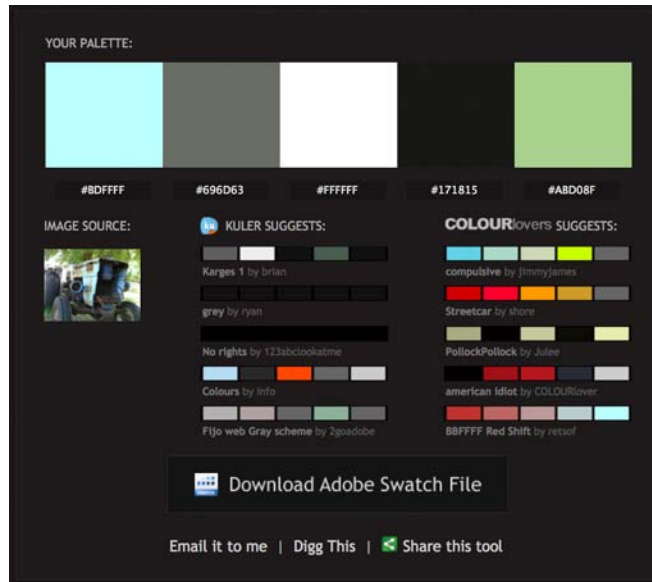


Figure 2.40. Pictaculous Color

Colour Contrast Check

When choosing the colors for your palettes, it's always good to try to pick at least two colors that have enough contrast to be used as background and text colors. Having a proper contrast between text and background colors is essential for interactive design; without it, some people may be unable to read your site. An easy way to confirm that there's enough contrast between two colors is to plug the RGB values for your foreground and background into Jonathan Snook's Colour Contrast Check¹⁹ website.

Sometimes combinations that you think would be valid fail to meet the color difference and brightness requirements of the Web. As Jonathan says in his blog post about the contrast checker,²⁰ "... this tool shouldn't be taken as gospel ... but rather should help guide you towards better colour choices."

Being able to come up with a unique color palette is all about keeping your eyes open. If you see a website, advertisement, illustration, or other graphic that stands out, try to figure out what the dominant colors are, and what type of color scheme underlies the palette. Remember, though, that color inspiration can come from anywhere. Is there a color that reminds you of a certain song? How about the colors of your favorite meal? Maybe there's even a color in that tacky seventies wallpaper in your parents' house that would work well for you. Being aware of the kinds of issues associated with color usage will give you an eye for color and an ability to come up with original palettes that fulfill the requirements of your client.

¹⁹ http://snook.ca/technical/colour_contrast/colour.html

²⁰ http://snook.ca/archives/accessibility_and_usability/colour_color_co

Application: the Color of Coupons

Returning to our design case study, when we left off with Southern Savers at the end of Chapter 1, team Squared Eye was making great progress on the redesign. They went through a discovery phase of becoming familiar with the site, its users, and how Jenny manages the content. They attended a couponing workshop, performed some usability testing, and even did a bit of sticky-note information architecture before planning some layout concepts in Omnigraffle. Now it's time to bring a little color to the project.

To do that, Matthew Smith of Squared Eye pulled in co-working partner and branding specialist Andrew Ramos²¹ to create a visual brand identity and begin work on the printed assets for Southern Savers. “From the outset,” said Matthew, “we all realized Southern Savers could use a rebranding. It lacked a clear visual identity, but the concept and business was extremely strong, so we had a lot to work with.” To start the branding process, they needed to know what colors would work best for the design. Along with asking Jenny directly for colors she liked, Andrew put together a **mood board** for the project.

If you've ever watched television shows about interior or landscape design, you've probably seen designers present a board to their clients with fabric samples, furniture pictures, and paint colors. These presentations help designers gauge the client's reactions about design decisions before putting a lot of work into creating fancier, more time-consuming visuals. The process works just as well in the world of web design. Figure 2.41 shows some of the imagery Andrew included in the mood boards he created for Southern Savers.

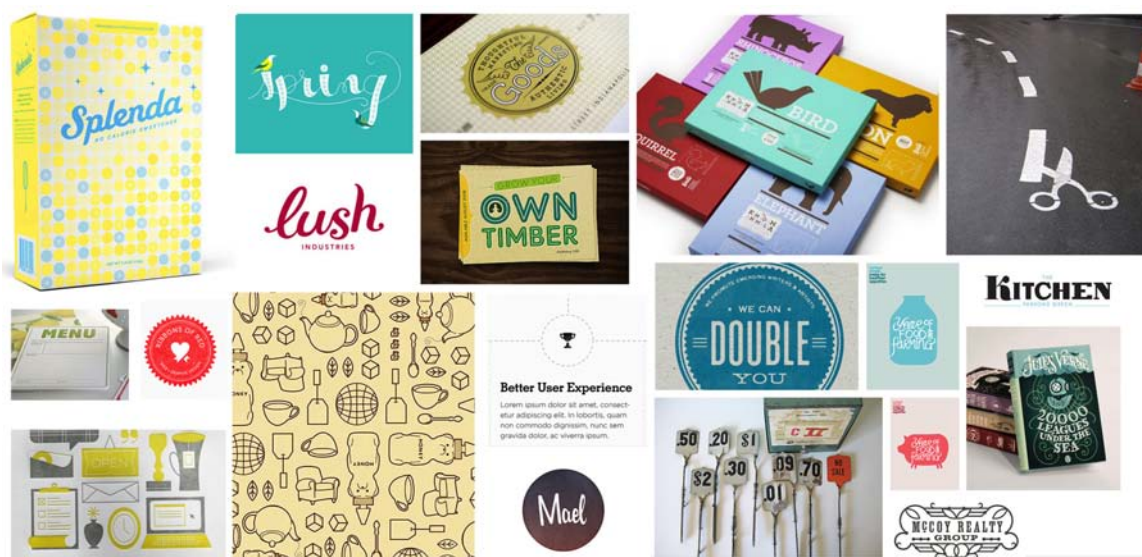


Figure 2.41. A mood board of beautiful Southern imagery

²¹ <http://andrewramos.com/>

As you look through the elements of the image above, you'll notice that there are a wide variety of colors, textures, and typography. Andrew's inspiration, and the concept that ties all of these thumbnails together, is the keyword "Southern." A few of the images Jenny liked best are shown below in Figure 2.42.



Figure 2.42. Jenny's top picks: Jules Verne covers, antique register pieces, and colorful animals

While Jenny didn't pick these images specifically for the colors, you'll notice a common theme that runs through all three—teal! Whether she knew it or not, Jenny provided a foundation for her site's color scheme with her mood board picks. Another color that's present in all three of these images is red-orange. As you know from the section called "The Scheme of Things" we covered earlier, this would have made for a beautiful complementary color scheme, but Andrew and the Squared Eye team instead opted to build a complementary palette based on Jenny's love for teal. They pulled some of the greens from the *20,000 Leagues Under the Sea* cover she picked, which play double duty, reminding visitors of the money they can save on the site.²² They then paired those greens with some creamy yellows, and added a bright blue from the opposite side of this analogous color block to use as an accent color. The final color scheme in Figure 2.43 is fun, casual, and friendly.



Figure 2.43. Color scheme

²² This is one of those instances where cultural considerations would need to play into your color choices. In this case, the site's visitors are primarily located in the US, so the association of the color green with money is a safe one.

When I asked Jenny her thoughts on the color choices, she explained that despite a large percentage of her visitors being female, she wanted to avoid the site looking too girly. “I want everybody to feel comfortable using the site,” she said. From an emotional standpoint, this color foundation was an obvious choice. “Blues and greens generally evoke a sense of calm and casualness,” said Andrew. “This is obviously very appropriate for approaching ... Southern Savers, where people may think it’s going to be complicated based on their past couponing fiascoes.” This exercise gave Andrew the color inspiration he needed to move on with his branding work. It also added depth to what the Squared Eye team knew about the project. In fact, depth is exactly what we’ll be exploring next. No, I won’t be reading from *20,000 Leagues Under the Sea*; instead we’re going to talk about texture.